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PATEL, ASHOKKUMAR B	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/074,411	EASTVOLD, ROGER	
	Examiner	Art Unit	
	ASHOK B. PATEL	2449	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 January 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-36 are subject to examination.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1/5/2010 has been entered.

Interview Summary

3. Upon a request for a telephonic interview from the Applicant's representative, the interview was conducted on February 18, 2010. During the interview, Examiner suggested that if the subject matter of claim 35 is added to all independent claims with additional details on the functioning of all modules as specified in the specification would lead the prosecution further in the right direction and would mandate a further updating of search enquiring those details..

Response to Arguments

4. Applicant's arguments filed 1/5/2010 with respect to claims 1-36 have been fully considered but they are not persuasive for the following reasons:

Applicant's argument:

Further, for exemplary purposes only, page 14, line 26 through page 15, line 13 describes that all communications between the user of the desktop 200 in the remote

network and the tool 102 in the local network are made through the equipment diagnostic monitoring system 120. Thus, because the specification as filed describes that security of the tool is provided by passing all communications trough the equipment diagnostic monitoring system such that direct IP routing to the tool is avoided, it naturally follows that the remote network receives the second data without an identity of the predetermined equipment associated with the second data being known to the remote network. Thus, one reasonably skilled in the art would undoubtedly be able to make or use the claimed invention without undue experimentation based on the specification as filed. The Examiner appears to be basing the 35 USC 112, first paragraph rejection solely on the language used in the claim not being recited word for word in the specification. However, as described above, this is not the test for enablement under 35 USC 112, first paragraph. It is also noted that the language used in the claims (i.e. the remote network receives the second data without an identity of the predetermined equipment associated with the second data being known to the remote network) is merely paraphrasing what is clearly described in the specification as filed (see the exemplary citations to Applicant's specification noted above). Thus, it is absolutely certain that one reasonably skilled in the art would be able to make or use the invention as claimed from Applicant's specification without undue experimentation. Therefore, the rejection under 35 USC 112, first paragraph is unfounded and should be withdrawn."

Examiner's response:

Examiner notes, as Applicant has point out in the argument as underlined above, "direct IP routing to the tool is avoided" versus "it naturally follows that the remote network receives the second data without an identity of the predetermined equipment associated with the second data being known to the remote network."

Examiner respectfully disagrees. Claim recites "the module being configured to receive and process a first data from the remote network and send a different data to the local network based on the first data received from the remote network and to transmit a second data from the intermediate network to the remote network where the second data is related to a predetermined condition of predetermined equipment identified by the module, wherein the remote network receives the second data without an identity of the predetermined equipment associated with the second data being known to the remote network,". Here the "first data" is sent as "a different data", however, "a second data" where the second data is related to a predetermined condition of predetermined equipment identified by the module is sent to remote network as a second data." Then how would "it naturally flow" "the remote network receives the second data without an identity of the predetermined equipment associated with the second data being known to the remote network

As such the previous under 35 U.S.C. 112, first paragraph is maintained.

Applicant's argument:

"There is absolutely no disclosure in Pyotsia of a module being configured to monitor the predetermined equipment substantially independent of input from the

remote network as recited in Applicant's claim 1. Combining Pyotsia with Reid fails to remedy this deficiency as Reid is absolutely silent as to this feature of claim 1".

Examiner's response:

Pyotsia teaches "The WWW server 23 and 33 utilizes the data in the device database 22 for creating the interactive WWW pages for browsing the data and for control and configuration of the field devices. As the server 23 or 33 uses the same database with the diagnostic system 21, the contents of the WWW pages are always up-to-date."

Applicant's argument:

"The address hiding and remapping of Reid would effectively remove the identity of the field devices, the plant and the location of the field devices within the plant the from these WWW pages leaving the user unable to access a specific field device located in a specific location of s specific plant as the user would no longer know or be able to determine the location of the field devices due to the address hiding and remapping leaving Pyotsia unsatisfactory for its intended purpose. Thus, claim 1 is patentable over the combination of Pyotsia and Reid for this additional reason."

Examiner's response:

Reid teaches at col. 6, lines 46-56, "A rewrite node is a point in an access rule where source or destination addresses are mapped to other source or destination addresses. Destination IP address rewrites allow an inbound connection through

network address translation (NAT) address hiding to be remapped to a destination inside the NAT barrier. Source address rewrites can be used on outbound connections to make the source appear to be one of many external addresses. This process allows the internal hosts to be aliased to external addresses. **Rewrites can be based on any connection criteria, including users."**

Reid teaches in the context of col. 5, line 58-63, "Access rules are the way in which the firewall protects regions from **unauthorized access.** For each connection attempt, the firewall checks it against the defined access rules. The rule that matches the characteristics of the connection request is used to determine whether the connection should be allowed or denied.

Reid teaches rewrites are based on "users" for determining access authorization.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 1, 6, 11 and 24 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. These claims contains the phrase

"wherein the remote network receives the second data without an identity of the predetermined equipment associated with the second data being known to the remote network", is not described in the specification.

Also, the amended claim 1, incorporates the following phrase "the module being configured to monitor the predetermined equipment substantially independent of input from the remote network. ", claims 6, 11 and 24 "local network substantially independent of input from the remote network,". Examiner was unable to find "substantially" in the instant specification.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1, 6, 11 and 24 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

These claims incorporate the term "substantially independent" which is not clear and is a relative term which renders the claim indefinite. The term "substantially" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 1-36 are rejected under 35 U.S.C. 103(a) as being Pyotsia et al. (hereinafter Pyotsia) (US 7, 010, 294 B1) in view of Reid et al. (hereinafter Reid)(US 6, 182, 226 B1)

Referring to claim 1,

Pyotsia teaches a system for accessing data remotely from a network (Fig. 2), comprising:

a local network interface permitting data transfer between a local network (please refer to col. 5, line 19-26, "With reference to FIG. 2, **a diagnostic system 21** may be any automation system, such as automation system 11 and 12 in FIG. 1, or any field device management or control system, such as the management system 10 in FIG. 1, or combination thereof." **Note: Fig. 1, element 10 which is element 21 of Fig. 2 is an "a local network interface" permitting data transfer from a local network "which is Fig. 2, element "Hart/Field bus and "field devices.")** and an intermediate network (Fig. 1, element "Factory LAN" and including Fig. 2, elements 21 and 23 is "an intermediate network ", please refer to col. 5, line 19-26, "With reference to FIG. 2, **a diagnostic system 21** may be any automation system, such as automation system 11 and 12 in FIG. 1, or any field device management or control system, such as the

management system 10 in FIG. 1, or combination thereof. A characteristic feature of the diagnostic system is that it comprises a wired connection, such as a field bus or a HART bus, to field devices 14, 15 and 16, and is able to control or configure the field devices, or to read measurement or status data from the field devices." **note: Thus, "the management system 10" is a diagnostic system 21 of Fig. 2 interfacing the Factory LAN" of Fig. 1.)** (Fig. 2, element 21's interface showing OLE and "data" going into element 23) Fi.2, element 23);

a remote network interface device (Fig. 2, element 23) permitting data transfer between the intermediate network and a remote network (Fig. 2, element 24, 25, 26, col. 6, line 3-41); and

a module located within the intermediate network, through which data transferring between the local network and the remote network passes, the module being configured to receive and process a first data from the remote network and send a different data to the local network based on the first data received from the remote network, the module being configured to monitor the predetermined equipment substantially independent of input from the remote network. (col. 6, line 63-col. 7, line 67, "FIG. 3 illustrates the wireless control arrangement according to the present invention when using the WAP. The diagnostic system 21, device database 22 as well as the WWW server 33 may be similar to those described with reference to FIG. 2. However, content of WWW pages may be created so that the use of WAP and WML is taken into account, e.g. by providing simple WWW pages with the HTML language or by using the WML language in the WWW pages. The mobile terminal MT is provided with

a WAP micro browser, whereas the data connection through the mobile communication network 26 is similar to that in FIG. 2. A WAP gateway 35 provides a connection between the mobile communication network 26 and the WWW technology in the internet 24. Firstly, the WAP gateway 35 translates WAP requests to WWW requests thereby allowing the WAP micro browser in the mobile terminal MT to submit requests to the WWW server 33. The WAP gateway 35 also translates the responses from the WWW server 33 into a format understood by the micro browser in the MT. If the WWW server 33 provides a WAP content (e.g., WML), the WAP gateway 35 retrieves it directly from the WWW server and forwards it to the MT. However, if the WWW server 33 provides a WWW content (such as HTML), the WAP gateway 35 (or a separate filter unit) translates the WWW content (e.g., HTML) into WAP content (e.g., WML). This translation is also called filtering since it often extracts the essential parts of the WWW content for translation. A further advantage of the WAP is that it inherently provides a connection security between the MT and the WWW server 33. The security and the authentication of the user is especially important when the inventive arrangement is used for configuration and control of the field devices. As the configuration and control commands will affect on the operation of the plant, a system according to the invention has to assure that the user is an authorized user. **It may also be possible to create a WWW server 33 that includes the WAP gateway functionality 35,** in order to facilitate end-to-end security solutions, or to achieve better access control or a guarantee of responsiveness. The WWW server 23 and 33 utilizes the data in the device database 22 for creating the interactive WWW pages for browsing the data and

for control and configuration of the field devices. As the server 23 or 33 uses the same database with the diagnostic system 21, the contents of the WWW pages are always up-to-date. The mobile terminal MT is able to browse the diagnostic and configuration data in the device database 22 by means of the interactive WWW pages. In response to the requests and selections made by the user in the interactive WWW pages the WWW server 23 makes inquiries to the device database 22, and a new WWW page is created according to the data obtained from the database 22. The created WWW page may include diagnostic data, status and an operation history data of the selected field device, as well as information required for controlling and configuring the field device. According to the user's selections an appropriate piece of data is shown in the WWW page in text format, graphical format and/or in any other suitable format, together with the fields or links for making further selections or commands. The server 23 or 33 translates the configuration or control commands made by the user in the interactive WWW page into configuration commands used in the interface between the WWW server 23 or 33 and the diagnostic system 21, typically based on the information obtained from the database 22. The interface between the server 23 and the diagnostic system 21 may be OLE (Object Linking and Embedding) The diagnostic system 21 forwards the control and configuration commands received from the server 23 or 33 to the field devices, typically upon translating the generic commands into the device specific instructions. As a result, an "on-line" connection from the mobile terminal MT to the field device is provided.")and to transmit a second data from the intermediate network to the remote network where the second data is related to a predetermined

condition of predetermined equipment identified by the module (col. 8, line 1-22, “By means of the inventive interactive user interface and the "on-line" connection, the maintenance personnel is able to retrieve information on the operation of a desired field device, such as a control valve, and display it on the user interface of the mobile terminal. The information may be displayed in a text format and/or graphical format. The information may also include alarms and any operation parameters which the maintenance person wishes to monitor on-line, such as the opening of a valve. The operational data obtained by the mobile terminal MT allows the maintenance person to immediately make a decision on the maintenance need of the respective field device, i.e. whether it is possible to postpone the maintenance operation up to the next shut down of the plant or whether special arrangements are needed in order to avoid an unintentional shutdown. During the shutdown of the plant the mobile terminal can be used for performing various field test for the field device, such as a step response test or a hystheresis test for a control valve. Also during the operation of the plant the diagnostic system 21 may allow the mobile terminal to perform a forced control of the field device to a desired mode of operation or position.”)

Pyotsia fails to teach “wherein the remote network receives the second data without an identity of the predetermined equipment associated with the second data being known to the remote network”.

Reid teaches “A rewrite node is a point in an access rule where source or destination addresses are mapped to other source or destination addresses. Destination IP address rewrites allow an inbound connection through network address

translation (NAT) address hiding to be remapped to a destination inside the NAT barrier. Source address rewrites can be used on outbound connections to make the source appear to be one of many external addresses. This process allows the internal hosts to be aliased to external addresses. Rewrites can be based on any connection criteria, including users.", col. 6, lines 46-56. ("wherein the remote network receives the second data without an identity of the predetermined equipment associated with the second data being known to the remote network"

One of ordinary skill in the art could have substituted "WAP security of Pyotsia by known methods. For example, Pyotsia discloses security by WAP protocol and Reid discloses "Destination IP address rewrites allow an inbound connection through network address translation (NAT) address hiding to be remapped to a destination inside the NAT barrier" , and the results would have been a predictable use of known technique of providing security over the network . Thus, it would have been obvious to one of ordinary skill in the art to replace the WAP security with a network address translation (NAT)

It would have been obvious because it provides a method for controlling interactions between networks by the use of firewalls with defined regions as taught by Reid.

Referring to claim 2,

Pyotsia teaches the system of claim 1, wherein the data transfer between each of the networks occurs via the Internet Protocol (IP), and wherein each network has its

own unique IP address (Fig. 2, elements 26, 24 25 and 23 are located in the internet environment.)

Referring to claim 3,

Keeping in mine the teachings of Pyotsia as stated above, Pyotsia explicitly fails to teach the system of claim 2, wherein the module hides the IP addresses of the remote network and the local network from each other.

Reid teaches "A rewrite node is a point in an access rule where source or destination addresses are mapped to other source or destination addresses. Destination IP address rewrites allow an inbound connection through network address translation (NAT) address hiding to be remapped to a destination inside the NAT barrier. Source address rewrites can be used on outbound connections to make the source appear to be one of many external addresses. This process allows the internal hosts to be aliased to external addresses. Rewrites can be based on any connection criteria, including users.", col. 6, lines 46-56. (wherein the data transfer between each of the networks occurs via the Internet Protocol (IP), and wherein each network has its own unique IP address, and the system of claim 2, wherein the module hides the IP addresses of the remote network and the local network from each other.)

One of ordinary skill in the art could have substituted "WAP security of Pyotsia by known methods. For example, Pyotsia discloses security by WAP protocol and Reid discloses "Destination IP address rewrites allow an inbound connection through network address translation (NAT) address hiding to be remapped to a destination inside the NAT barrier" , and the results would have been a predictable use of known technique of

providing security over the network . Thus, it would have been obvious to one of ordinary skill in the art to replace the WAP security with a network address translation (NAT)

It would have been obvious because it provides a method for controlling interactions between networks by the use of firewalls with defined regions as taught by Reid.

Referring to claim 4,

Pyotsia teaches the system of claim 2, wherein the module exchanges data with an equipment diagnostic monitor system located within the intermediate network, the equipment diagnostic monitoring system being configured to monitor a health of the equipment within the local network and wherein the equipment diagnostic monitor system has the function of monitoring at least one activity of at least one tool residing within the local network (col. 6, line 63-col. 7, line 67, "FIG. 3 illustrates the wireless control arrangement according to the present invention when using the WAP. The diagnostic system 21, device database 22 as well as the WWW server 33 may be similar to those described with reference to FIG. 2. However, content of WWW pages may be created so that the use of WAP and WML is taken into account, e.g. by providing simple WWW pages with the HTML language or by using the WML language in the WWW pages. The mobile terminal MT is provided with a WAP micro browser, whereas the data connection through the mobile communication network 26 is similar to that in FIG. 2. A WAP gateway 35 provides a connection between the mobile communication network 26 and the WWW technology in the internet 24. Firstly, the

WAP gateway 35 translates WAP requests to WWW requests thereby allowing the WAP micro browser in the mobile terminal MT to submit requests to the WWW server 33. The WAP gateway 35 also translates the responses from the WWW server 33 into a format understood by the micro browser in the MT. If the WWW server 33 provides a WAP content (e.g., WML), the WAP gateway 35 retrieves it directly from the WWW server and forwards it to the MT. However, if the WWW server 33 provides a WWW content (such as HTML), the WAP gateway 35 (or a separate filter unit) translates the WWW content (e.g., HTML) into a WAP content (e.g., WML). This translation is also called filtering since it often extracts the essential parts of the WWW content for translation. A further advantage of the WAP is that it inherently provides a connection security between the MT and the WWW server 33. The security and the authentication of the user is especially important when the inventive arrangement is used for configuration and control of the field devices. As the configuration and control commands will affect on the operation of the plant, a system according to the invention has to assure that the user is an authorized user. It may also be possible to create a WWW server 33 that includes the WAP gateway functionality 35, in order to facilitate end-to-end security solutions, or to achieve better access control or a guarantee of responsiveness. The WWW server 23 and 33 utilizes the data in the device database 22 for creating the interactive WWW pages for browsing the data and for control and configuration of the field devices. As the server 23 or 33 uses the same database with the diagnostic system 21, the contents of the WWW pages are always up-to-date. The mobile terminal MT is able to browse the diagnostic and configuration data in the device

database 22 by means of the interactive WWW pages. In response to the requests and selections made by the user in the interactive WWW pages the WWW server 23 makes inquiries to the device database 22, and a new WWW page is created according to the data obtained from the database 22. The created WWW page may include diagnostic data, status and an operation history data of the selected field device, as well as information required for controlling and configuring the field device. According to the user's selections an appropriate piece of data is shown in the WWW page in text format, graphical format and/or in any other suitable format, together with the fields or links for making further selections or commands. The server 23 or 33 translates the configuration or control commands made by the user in the interactive WWW page into configuration commands used in the interface between the WWW server 23 or 33 and the diagnostic system 21, typically based on the information obtained from the database 22. The interface between the server 23 and the diagnostic system 21 may be OLE (Object Linking and Embedding) The diagnostic system 21 forwards the control and configuration commands received from the server 23 or 33 to the field devices, typically upon translating the generic commands into the device specific instructions. As a result, an "on-line" connection from the mobile terminal MT to the field device is provided.", col. 8, line 1-22, "By means of the inventive interactive user interface and the "on-line" connection, the maintenance personnel is able to retrieve information on the operation of a desired field device, such as a control valve, and display it on the user interface of the mobile terminal. The information may be displayed in a text format and/or graphical format. The information may also include alarms and any operation

parameters which the maintenance person wishes to monitor on-line, such as the opening of a valve. The operational data obtained by the mobile terminal MT allows the maintenance person to immediately make a decision on the maintenance need of the respective field device, i.e. whether it is possible to postpone the maintenance operation up to the next shut down of the plant or whether special arrangements are needed in order to avoid an unintentional shutdown. During the shutdown of the plant the mobile terminal can be used for performing various field test for the field device, such as a step response test or a hystheresis test for a control valve. Also during the operation of the plant the diagnostic system 21 may allow the mobile terminal to perform a forced control of the field device to a desired mode of operation or position.")

Referring to claim 5,

Pyotsia teaches the system of claim 4, wherein the equipment diagnostic monitor system collects and analyzes data from tests performed on the at least one tool. (col. 8, line 1-22, "By means of the inventive interactive user interface and the "on-line" connection, the maintenance personnel is able to retrieve information on the operation of a desired field device, such as a control valve, and display it on the user interface of the mobile terminal. The information may be displayed in a text format and/or graphical format. The information may also include alarms and any operation parameters which the maintenance person wishes to monitor on-line, such as the opening of a valve. The operational data obtained by the mobile terminal MT allows the maintenance person to immediately make a decision on the maintenance need of the respective field device, i.e. whether it is possible to postpone the maintenance operation up to the next shut

down of the plant or whether special arrangements are needed in order to avoid an unintentional shutdown. During the shutdown of the plant the mobile terminal can be used for performing various field test for the field device, such as a step response test or a hystheresis test for a control valve. Also during the operation of the plant the diagnostic system 21 may allow the mobile terminal to perform a forced control of the field device to a desired mode of operation or position." Col. 5, line 27-53, "For this purpose, the diagnostic system 21 comprises a management and control software for the field devices. In the preferred embodiment each field device type (e.g. two different control valves or control valves of different manufacturers may represent different device types) is provided with a specific control software which contains all necessary data and instructions sets for controlling, configuring, reading, etc., the field devices of a predetermined time. Normally these operations can be made by a control room personnel from a work station. A device database 22 stores information on each field device controlled by the diagnostic system 21 and, preferably, all diagnostics data read from the field devices. In other words, the database 22 contains an updated configuration of field devices as well as the operation history thereof. In accordance to the principles of the present invention, the diagnostic system 21 is further provided with an interactive user interface which utilize the configuration, control and management data in the database 22 and is accessible by the mobile terminal MT through a dedicated data connection established over the cellular communication system 26, in order to selectively control, configure or monitor the field devices 14, 15 and 16 connected to the diagnostic system 21. In the preferred embodiment of the invention

the interactive user interface is embodied as one or more world wide web (WWW) pages in a WWW server 23.")

Referring to claim 6,

Pyotsia teaches a system for accessing a local network from a remote network through an intermediate network(Fig. 2), comprising:

a local network interface permitting data transfer between the local network (please refer to col. 5, line 19-26, "With reference to FIG. 2, **a diagnostic system 21** may be any automation system, such as automation system 11 and 12 in FIG. 1, or any field device management or control system, such as the management system 10 in FIG. 1, or combination thereof." **Note: Fig. 1, element 10 which is element 21 of Fig. 2 is an "a local network interface" permitting data transfer from a local network "which is Fig. 2, element "Hart/Field bus and "field devices.")** and the intermediate network (Fig. 1, element "Factory LAN" and including Fig. 2, elements 21 and 23 is "an intermediate network ", please refer to col. 5, line 19-26, "With reference to FIG. 2, **a diagnostic system 21** may be any automation system, such as automation system 11 and 12 in FIG. 1, or any field device management or control system, such as the management system 10 in FIG. 1, or combination thereof. A characteristic feature of the diagnostic system is that it comprises a wired connection, such as a field bus or a HART bus, to field devices 14, 15 and 16, and is able to control or configure the field devices, or to read measurement or status data from the field devices." **note: Thus, "the management system 10" is a diagnostic system 21 of Fig. 2 interfacing the Factory LAN" of Fig. 1.)** (Fig. 2, element 21's interface showing OLE and "data" going

into element 23) Fi.2 ,element 23) , the local network having a plurality of equipment located within the local network (please refer to col. 5, line 19-26, "With reference to FIG. 2, **a diagnostic system 21** may be any automation system, such as automation system 11 and 12 in FIG. 1, or any field device management or control system, such as the management system 10 in FIG. 1, or combination thereof." **Note: Fig. 1, element 10 which is element 21 of Fig. 2 is an "a local network interface" permitting data transfer from a local network "which is Fig. 2, element "Hart/Field bus and "field devices.")**;

a remote network interface permitting data transfer between the remote network Fig. 2, element 23) and the intermediate network, the remote network having the user located within the remote network; and permitting data transfer between the intermediate network and a remote network (Fig. 2, element 24, 25, 26, col. 6, line 3-41); and

a module located within the intermediate network, the module being configured to receive and process data from at least one of the plurality of users of the remote network and send a different data to at least one of the plurality of equipment of the local network based on the data received from the remote network, the module being further configured to allow one of the plurality of users to select at least one equipment diagnostic monitor system from a plurality of equipment diagnostic monitoring systems; and the equipment diagnostic monitor system for monitoring the health of the plurality of equipment within the local network, the equipment diagnostic monitoring system being located within the intermediate network, wherein the equipment diagnostic monitor

system monitors tests performed on the plurality of equipment residing within the local network. (col. 6, line 63-col. 7, line 67, "FIG. 3 illustrates the wireless control arrangement according to the present invention when using the WAP. The diagnostic system 21, device database 22 as well as the WWW server 33 may be similar to those described with reference to FIG. 2. However, content of WWW pages may be created so that the use of WAP and WML is taken into account, e.g. by providing simple WWW pages with the HTML language or by using the WML language in the WWW pages. The mobile terminal MT is provided with a WAP micro browser, whereas the data connection through the mobile communication network 26 is similar to that in FIG. 2. A WAP gateway 35 provides a connection between the mobile communication network 26 and the WWW technology in the internet 24. Firstly, the WAP gateway 35 translates WAP requests to WWW requests thereby allowing the WAP micro browser in the mobile terminal MT to submit requests to the WWW server 33. The WAP gateway 35 also translates the responses from the WWW server 33 into a format understood by the micro browser in the MT. If the WWW server 33 provides a WAP content (e.g., WML), the WAP gateway 35 retrieves it directly from the WWW server and forwards it to the MT. However, if the WWW server 33 provides a WWW content (such as HTML), the WAP gateway 35 (or a separate filter unit) translates the WWW content (e.g., HTML) into a WAP content (e.g., WML). This translation is also called filtering since it often extracts the essential parts of the WWW content for translation. A further advantage of the WAP is that it inherently provides a connection security between the MT and the WWW server 33. The security and the authentication of the user is especially important

when the inventive arrangement is used for configuration and control of the field devices. As the configuration and control commands will affect on the operation of the plant, a system according to the invention has to assure that the user is an authorized user. It may also be possible to create a WWW server 33 that includes the WAP gateway functionality 35, in order to facilitate end-to-end security solutions, or to achieve better access control or a guarantee of responsiveness. The WWW server 23 and 33 utilizes the data in the device database 22 for creating the interactive WWW pages for browsing the data and for control and configuration of the field devices. As the server 23 or 33 uses the same database with the diagnostic system 21, the contents of the WWW pages are always up-to-date. The mobile terminal MT is able to browse the diagnostic and configuration data in the device database 22 by means of the interactive WWW pages. In response to the requests and selections made by the user in the interactive WWW pages the WWW server 23 makes inquiries to the device database 22, and a new WWW page is created according to the data obtained from the database 22. The created WWW page may include diagnostic data, status and an operation history data of the selected field device, as well as information required for controlling and configuring the field device. According to the user's selections an appropriate piece of data is shown in the WWW page in text format, graphical format and/or in any other suitable format, together with the fields or links for making further selections or commands. The server 23 or 33 translates the configuration or control commands made by the user in the interactive WWW page into configuration commands used in the interface between the WWW server 23 or 33 and the diagnostic

system 21, typically based on the information obtained from the database 22. The interface between the server 23 and the diagnostic system 21 may be OLE (Object Linking and Embedding) The diagnostic system 21 forwards the control and configuration commands received from the server 23 or 33 to the field devices, typically upon translating the generic commands into the device specific instructions. As a result, an "on-line" connection from the mobile terminal MT to the field device is provided." col. 8, line 1-22, "By means of the inventive interactive user interface and the "on-line" connection, the maintenance personnel is able to retrieve information on the operation of a desired field device, such as a control valve, and display it on the user interface of the mobile terminal. The information may be displayed in a text format and/or graphical format. The information may also include alarms and any operation parameters which the maintenance person wishes to monitor on-line, such as the opening of a valve. The operational data obtained by the mobile terminal MT allows the maintenance person to immediately make a decision on the maintenance need of the respective field device, i.e. whether it is possible to postpone the maintenance operation up to the next shut down of the plant or whether special arrangements are needed in order to avoid an unintentional shutdown. During the shutdown of the plant the mobile terminal can be used for performing various field test for the field device, such as a step response test or a hystheresis test for a control valve. Also during the operation of the plant the diagnostic system 21 may allow the mobile terminal to perform a forced control of the field device to a desired mode of operation or position.")

Pyotsia fails to teach “a plurality of equipment diagnostic monitor system.”, however, one of ordinary skill in the art could have used more than one (plurality) of Pyotsia‘s “Diagnostics systems” to monitor the devices in various LAN network segments independently and the results of such an extension of Pyotsia's invention would have been predictable in that the devices located at different segments of the LANs could be independently remotely controlled and monitored.

Pyotsia fails to teach “wherein the remote network receives the second data without an identity of the predetermined equipment associated with the second data being known to the remote network”.

Reid teaches “A rewrite node is a point in an access rule where source or destination addresses are mapped to other source or destination addresses. Destination IP address rewrites allow an inbound connection through network address translation (NAT) address hiding to be remapped to a destination inside the NAT barrier. Source address rewrites can be used on outbound connections to make the source appear to be one of many external addresses. This process allows the internal hosts to be aliased to external addresses. Rewrites can be based on any connection criteria, including users.”, col. 6, lines 46-56. (“wherein the remote network receives the second data without an identity of the predetermined equipment associated with the second data being known to the remote network”

One of ordinary skill in the art could have substituted “WAP security of Pyotsia by known methods. For example, Pyotsia discloses security by WAP protocol and Reid discloses “Destination IP address rewrites allow an inbound connection through network

address translation (NAT) address hiding to be remapped to a destination inside the NAT barrier" , and the results would have been a predictable use of known technique of providing security over the network . Thus, it would have been obvious to one of ordinary skill in the art to replace the WAP security with a network address translation (NAT)

It would have been obvious because it provides a method for controlling interactions between networks by the use of firewalls with defined regions as taught by Reid.

Referring to claim 7,

Pyotsia teaches the system of claim 6, wherein the data transfer between each of the networks occurs via the Internet Protocol (IP) (Fig. 2, elements 26, 24 25 and 23 are located in the internet environment.)

Referring to claim 8,

Keeping in mine the teachings of Pyotsia as stated above, Pyotsia explicitly fails to teach to teach the system of claim 7, wherein the module hides the IP addresses of the local network and the remote network from each other.

Reid teaches "A rewrite node is a point in an access rule where source or destination addresses are mapped to other source or destination addresses. Destination IP address rewrites allow an inbound connection through network address translation (NAT) address hiding to be remapped to a destination inside the NAT barrier. Source address rewrites can be used on outbound connections to make the source appear to be one of many external addresses. This process allows the internal hosts to

be aliased to external addresses. Rewrites can be based on any connection criteria, including users.", col. 6, lines 46-56. (wherein the data transfer between each of the networks occurs via the Internet Protocol (IP), and wherein each network has its own unique IP address, and the system of claim 2, wherein the module hides the IP addresses of the remote network and the local network from each other.)

One of ordinary skill in the art could have substituted "WAP security of Pyotsia by known methods. For example, Pyotsia discloses security by WAP protocol and Reid discloses "Destination IP address rewrites allow an inbound connection through network address translation (NAT) address hiding to be remapped to a destination inside the NAT barrier" , and the results would have been a predictable use of known technique of providing security over the network . Thus, it would have been obvious to one of ordinary skill in the art to replace the WAP security with a network address translation (NAT)

It would have been obvious because it provides a method for controlling interactions between networks by the use of firewalls with defined regions as taught by Reid.

Referring to claim 9,

Pyotsia teaches the system of claim 6, wherein the equipment diagnostic monitor system collects and analyzes data from the at least one activity of the at least one item (col. 8, line 1-22, "By means of the inventive interactive user interface and the "on-line" connection, the maintenance personnel is able to retrieve information on the operation of a desired field device, such as a control valve, and display it on the user

interface of the mobile terminal. The information may be displayed in a text format and/or graphical format. The information may also include alarms and any operation parameters which the maintenance person wishes to monitor on-line, such as the opening of a valve. The operational data obtained by the mobile terminal MT allows the maintenance person to immediately make a decision on the maintenance need of the respective field device, i.e. whether it is possible to postpone the maintenance operation up to the next shut down of the plant or whether special arrangements are needed in order to avoid an unintentional shutdown. During the shutdown of the plant the mobile terminal can be used for performing various field test for the field device, such as a step response test or a hystheresis test for a control valve. Also during the operation of the plant the diagnostic system 21 may allow the mobile terminal to perform a forced control of the field device to a desired mode of operation or position." Col. 5, line 27-53, "For this purpose, the diagnostic system 21 comprises a management and control software for the field devices. In the preferred embodiment each field device type (e.g. two different control valves or control valves of different manufacturers may represent different device types) is provided with a specific control software which contains all necessary data and instructions sets for controlling, configuring, reading, etc., the field devices of a predetermined time. Normally these operations can be made by a control room personnel from a work station. A device database 22 stores information on each field device controlled by the diagnostic system 21 and, preferably, all diagnostics data read from the field devices. In other words, the database 22 contains an updated configuration of field devices as well as the operation history thereof. In accordance to

the principles of the present invention, the diagnostic system 21 is further provided with an interactive user interface which utilize the configuration, control and management data in the database 22 and is accessible by the mobile terminal MT through a dedicated data connection established over the cellular communication system 26, in order to selectively control, configure or monitor the field devices 14, 15 and 16 connected to the diagnostic system 21. In the preferred embodiment of the invention the interactive user interface is embodied as one or more world wide web (WWW) pages in a WWW server 23.")

Referring to claim 10,

Pyotsia teaches the system of claim 6, wherein the user on the remote network may request that tests be performed on the at least one item, and may upload data to the remote network, from at least one test performed on the at least one item (col. 8, line 1-22, "By means of the inventive interactive user interface and the "on-line" connection, the maintenance personnel is able to retrieve information on the operation of a desired field device, such as a control valve, and display it on the user interface of the mobile terminal. The information may be displayed in a text format and/or graphical format. The information may also include alarms and any operation parameters which the maintenance person wishes to monitor on-line, such as the opening of a valve. The operational data obtained by the mobile terminal MT allows the maintenance person to immediately make a decision on the maintenance need of the respective field device, i.e. whether it is possible to postpone the maintenance operation up to the next shut down of the plant or whether special arrangements are needed in order to avoid an

unintentional shutdown. During the shutdown of the plant the mobile terminal can be used for performing various field test for the field device, such as a step response test or a hystheresis test for a control valve. Also during the operation of the plant the diagnostic system 21 may allow the mobile terminal to perform a forced control of the field device to a desired mode of operation or position." Col. 5, line 27-53, "For this purpose, the diagnostic system 21 comprises a management and control software for the field devices. In the preferred embodiment each field device type (e.g. two different control valves or control valves of different manufacturers may represent different device types) is provided with a specific control software which contains all necessary data and instructions sets for controlling, configuring, reading, etc., the field devices of a predetermined time. Normally these operations can be made by a control room personnel from a work station. A device database 22 stores information on each field device controlled by the diagnostic system 21 and, preferably, all diagnostics data read from the field devices. In other words, the database 22 contains an updated configuration of field devices as well as the operation history thereof. In accordance to the principles of the present invention, the diagnostic system 21 is further provided with an interactive user interface which utilize the configuration, control and management data in the database 22 and is accessible by the mobile terminal MT through a dedicated data connection established over the cellular communication system 26, in order to selectively control, configure or monitor the field devices 14, 15 and 16 connected to the diagnostic system 21. In the preferred embodiment of the invention

the interactive user interface is embodied as one or more world wide web (WWW) pages in a WWW server 23.")

Referring to claim 11,

Pyotsia teaches the data system, comprising:

a local network interface device enabling data transfer between a local network (please refer to col. 5, line 19-26, "With reference to FIG. 2, **a diagnostic system 21** may be any automation system, such as automation system 11 and 12 in FIG. 1, or any field device management or control system, such as the management system 10 in FIG. 1, or combination thereof." **Note: Fig. 1, element 10 which is element 21 of Fig. 2 is an "a local network interface" permitting data transfer from a local network "which is Fig. 2, element "Hart/Field bus and "field devices.")** and an intermediate network(Fig. 1, element "Factory LAN" and including Fig. 2, elements 21 and 23 is "an intermediate network ", please refer to col. 5, line 19-26, "With reference to FIG. 2, **a diagnostic system 21** may be any automation system, such as automation system 11 and 12 in FIG. 1, or any field device management or control system, such as the management system 10 in FIG. 1, or combination thereof. A characteristic feature of the diagnostic system is that it comprises a wired connection, such as a field bus or a HART bus, to field devices 14, 15 and 16, and is able to control or configure the field devices, or to read measurement or status data from the field devices." **note: Thus, "the management system 10" is a diagnostic system 21 of Fig. 2 interfacing the Factory LAN" of Fig. 1.)** (Fig. 2, element 21's interface showing OLE and "data" going into element 23) Fi.2 ,element 23); a local network interface permitting data transfer

between a local network and an intermediate network (please refer to col. 5, line 19-26, "With reference to FIG. 2, **a diagnostic system 21** may be any automation system, such as automation system 11 and 12 in FIG. 1, or any field device management or control system, such as the management system 10 in FIG. 1, or combination thereof." **Note: Fig. 1, element 10 which is element 21 of Fig. 2 is an "a local network interface" permitting data transfer from a local network "which is Fig. 2, element "Hart/Field bus and "field devices.");**

a remote network interface device (Fig. 2, element 23) enabling data transfer between a remote network and the intermediate network (Fig. 2, element 24, 25, 26, col. 6, line 3-41); and

a equipment diagnostic monitor system for monitoring a health of a plurality of equipment within the local network, the equipment diagnostic monitoring system being located within the intermediate network, wherein the equipment diagnostic monitor system monitors at least one activity of at least one of the plurality of equipment in the local network; wherein the intermediate network is configured to selectively receive and selectively process data from the remote network depending on a set of predetermined criteria applied by the intermediate network and send a different data to the local network based on the selectively processed data and to transmit a second data from the intermediate network to the remote network where the second data is related to a predetermined condition of equipment identified by the equipment diagnostic monitor system(col. 6, line 63-col. 7, line 67, "FIG. 3 illustrates the wireless control arrangement according to the present invention when using the WAP. The diagnostic system 21,

device database 22 as well as the WWW server 33 may be similar to those described with reference to FIG. 2. However, content of WWW pages may be created so that the use of WAP and WML is taken into account, e.g. by providing simple WWW pages with the HTML language or by using the WML language in the WWW pages. The mobile terminal MT is provided with a WAP micro browser, whereas the data connection through the mobile communication network 26 is similar to that in FIG. 2. A WAP gateway 35 provides a connection between the mobile communication network 26 and the WWW technology in the internet 24. Firstly, the WAP gateway 35 translates WAP requests to WWW requests thereby allowing the WAP micro browser in the mobile terminal MT to submit requests to the WWW server 33. The WAP gateway 35 also translates the responses from the WWW server 33 into a format understood by the micro browser in the MT. If the WWW server 33 provides a WAP content (e.g., WML), the WAP gateway 35 retrieves it directly from the WWW server and forwards it to the MT. However, if the WWW server 33 provides a WWW content (such as HTML), the WAP gateway 35 (or a separate filter unit) translates the WWW content (e.g., HTML) into a WAP content (e.g., WML). This translation is also called filtering since it often extracts the essential parts of the WWW content for translation. A further advantage of the WAP is that it inherently provides a connection security between the MT and the WWW server 33. The security and the authentication of the user is especially important when the inventive arrangement is used for configuration and control of the field devices. As the configuration and control commands will affect on the operation of the plant, a system according to the invention has to assure that the user is an authorized

user. It may also be possible to create a WWW server 33 that includes the WAP gateway functionality 35, in order to facilitate end-to-end security solutions, or to achieve better access control or a guarantee of responsiveness. The WWW server 23 and 33 utilizes the data in the device database 22 for creating the interactive WWW pages for browsing the data and for control and configuration of the field devices. As the server 23 or 33 uses the same database with the diagnostic system 21, the contents of the WWW pages are always up-to-date. The mobile terminal MT is able to browse the diagnostic and configuration data in the device database 22 by means of the interactive WWW pages. In response to the requests and selections made by the user in the interactive WWW pages the WWW server 23 makes inquiries to the device database 22, and a new WWW page is created according to the data obtained from the database 22. The created WWW page may include diagnostic data, status and an operation history data of the selected field device, as well as information required for controlling and configuring the field device. According to the user's selections an appropriate piece of data is shown in the WWW page in text format, graphical format and/or in any other suitable format, together with the fields or links for making further selections or commands. The server 23 or 33 translates the configuration or control commands made by the user in the interactive WWW page into configuration commands used in the interface between the WWW server 23 or 33 and the diagnostic system 21, typically based on the information obtained from the database 22. The interface between the server 23 and the diagnostic system 21 may be OLE (Object Linking and Embedding) The diagnostic system 21 forwards the control and

configuration commands received from the server 23 or 33 to the field devices, typically upon translating the generic commands into the device specific instructions. As a result, an "on-line" connection from the mobile terminal MT to the field device is provided." col. 8, line 1-22, "By means of the inventive interactive user interface and the "on-line" connection, the maintenance personnel is able to retrieve information on the operation of a desired field device, such as a control valve, and display it on the user interface of the mobile terminal. The information may be displayed in a text format and/or graphical format. The information may also include alarms and any operation parameters which the maintenance person wishes to monitor on-line, such as the opening of a valve. The operational data obtained by the mobile terminal MT allows the maintenance person to immediately make a decision on the maintenance need of the respective field device, i.e. whether it is possible to postpone the maintenance operation up to the next shut down of the plant or whether special arrangements are needed in order to avoid an unintentional shutdown. During the shutdown of the plant the mobile terminal can be used for performing various field test for the field device, such as a step response test or a hystheresis test for a control valve. Also during the operation of the plant the diagnostic system 21 may allow the mobile terminal to perform a forced control of the field device to a desired mode of operation or position.").

Pyotsia fails to teach "a plurality of equipment diagnostic monitor system.", however, one of ordinary skill in the art could have used more than one (plurality) of Pyotsia's "Diagnostics systems" to monitor the devices in various LAN network segments independently and the results of such an extension of Pyotsia's invention

would have been predictable in that the devices located at different segments of the LANs could be independently remotely controlled and monitored.

Referring to claim 12,

Pyotsia teaches the system of claim11, further comprising a security module located within the intermediate network, through which data transferred between the local network and the remote network passes (col. 7, line 22-34, "FIG. 3 illustrates the wireless control arrangement according to the present invention when using the WAP. The diagnostic system 21, device database 22 as well as the WWW server 33 may be similar to those described with reference to FIG. 2.", "A further advantage of the WAP is that it inherently provides a connection security between the MT and the WWW server 33. The security and the authentication of the user is especially important when the inventive arrangement is used for configuration and control of the field devices. As the configuration and control commands will affect on the operation of the plant, a system according to the invention has to assure that the user is an authorized user. It may also be possible to create a WWW server 33 that includes the WAP gateway functionality 35, in order to facilitate end-to-end security solutions, or to achieve better access control or a guarantee of responsiveness.")

Referring to claim 13,

Pyotsia teaches the system of claim 12, wherein data transfer between each of the networks occurs via an Internet Protocol (IP). (Fig. 2, elements 26, 24 25 and 23 are located in the internet environment.)

Referring to claim 14,

Keeping in mine the teachings of Pyotsia stated above, Pyotsia explicitly fails to teach the system of claim 13, wherein the module hides the IP addresses of the local network and the remote network from each other.

Reid teaches "A rewrite node is a point in an access rule where source or destination addresses are mapped to other source or destination addresses. Destination IP address rewrites allow an inbound connection through network address translation (NAT) address hiding to be remapped to a destination inside the NAT barrier. Source address rewrites can be used on outbound connections to make the source appear to be one of many external addresses. This process allows the internal hosts to be aliased to external addresses. Rewrites can be based on any connection criteria, including users.", col. 6, lines 46-56. (wherein the data transfer between each of the networks occurs via the Internet Protocol (IP), and wherein each network has its own unique IP address, and the system of claim 2, wherein the module hides the IP addresses of the remote network and the local network from each other.)

One of ordinary skill in the art could have substituted "WAP security of Pyotsia by known methods. For example, Pyotsia discloses security by WAP protocol and Reid discloses "Destination IP address rewrites allow an inbound connection through network address translation (NAT) address hiding to be remapped to a destination inside the NAT barrier" , and the results would have been a predictable use of known technique of providing security over the network . Thus, it would have been obvious to one of ordinary skill in the art to replace the WAP security with a network address translation (NAT)

It would have been obvious because it provides a method for controlling interactions between networks by the use of firewalls with defined regions as taught by Reid.

Referring to claim 15,

Pyotsia teaches the system of claim ii, wherein the equipment diagnostic monitor system collects and analyzes data from tests performed on the at least one item (col. 8, line 1-22, “By means of the inventive interactive user interface and the "on-line" connection, the maintenance personnel is able to retrieve information on the operation of a desired field device, such as a control valve, and display it on the user interface of the mobile terminal. The information may be displayed in a text format and/or graphical format. The information may also include alarms and any operation parameters which the maintenance person wishes to monitor on-line, such as the opening of a valve. The operational data obtained by the mobile terminal MT allows the maintenance person to immediately make a decision on the maintenance need of the respective field device, i.e. whether it is possible to postpone the maintenance operation up to the next shut down of the plant or whether special arrangements are needed in order to avoid an unintentional shutdown. During the shutdown of the plant the mobile terminal can be used for performing various field test for the field device, such as a step response test or a hystheresis test for a control valve. Also during the operation of the plant the diagnostic system 21 may allow the mobile terminal to perform a forced control of the field device to a desired mode of operation or position.” Col. 5, line 27-53, “For this purpose, the diagnostic system 21 comprises a management and control software for

the field devices. In the preferred embodiment each field device type (e.g. two different control valves or control valves of different manufacturers may represent different device types) is provided with a specific control software which contains all necessary data and instructions sets for controlling, configuring, reading, etc., the field devices of a predetermined time. Normally these operations can be made by a control room personnel from a work station. A device database 22 stores information on each field device controlled by the diagnostic system 21 and, preferably, all diagnostics data read from the field devices. In other words, the database 22 contains an updated configuration of field devices as well as the operation history thereof. In accordance to the principles of the present invention, the diagnostic system 21 is further provided with an interactive user interface which utilize the configuration, control and management data in the database 22 and is accessible by the mobile terminal MT through a dedicated data connection established over the cellular communication system 26, in order to selectively control, configure or monitor the field devices 14, 15 and 16 connected to the diagnostic system 21. In the preferred embodiment of the invention the interactive user interface is embodied as one or more world wide web (WWW) pages in a WWW server 23.")

Referring to claim 16,

Pyotsia teaches the system of claim ii, wherein the equipment diagnostic monitor system is configured to execute or ignore a request by the user on the remote network based on the set of predetermined criteria, wherein the user requests that tests be performed on the at least one item, and that data from previous tests performed on the

at least one item be uploaded (col. 5, line 40-42, “In other words, the database 22 contain an updated configuration of field devices as well as the operation history thereof.", col. 7, line 47-50, “The created WWW page may include diagnostic data, status and an operation history data of the selected field device, as well as information required for controlling and configuring the field device.", col. 8, line 1-22, “By means of the inventive interactive user interface and the "on-line" connection, the maintenance personnel is able to retrieve information on the operation of a desired field device, such as a control valve, and display it on the user interface of the mobile terminal. The information may be displayed in a text format and/or graphical format. The information may also include alarms and any operation parameters which the maintenance person wishes to monitor on-line, such as the opening of a valve. The operational data obtained by the mobile terminal MT allows the maintenance person to immediately make a decision on the maintenance need of the respective field device, i.e. whether it is possible to postpone the maintenance operation up to the next shut down of the plant or whether special arrangements are needed in order to avoid an unintentional shutdown. During the shutdown of the plant the mobile terminal can be used for performing various field test for the field device, such as a step response test or a hystheresis test for a control valve. Also during the operation of the plant the diagnostic system 21 may allow the mobile terminal to perform a forced control of the field device to a desired mode of operation or position.” Col. 5, line 27-53, “For this purpose, the diagnostic system 21 comprises a management and control software for the field devices. In the preferred embodiment each field device type (e.g. two different control

valves or control valves of different manufacturers may represent different device types) is provided with a specific control software which contains all necessary data and instructions sets for controlling, configuring, reading, etc., the field devices of a predetermined time. Normally these operations can be made by a control room personnel from a work station. A device database 22 stores information on each field device controlled by the diagnostic system 21 and, preferably, all diagnostics data read from the field devices. In other words, the database 22 contains an updated configuration of field devices as well as the operation history thereof. In accordance to the principles of the present invention, the diagnostic system 21 is further provided with an interactive user interface which utilize the configuration, control and management data in the database 22 and is accessible by the mobile terminal MT through a dedicated data connection established over the cellular communication system 26, in order to selectively control, configure or monitor the field devices 14, 15 and 16 connected to the diagnostic system 21. In the preferred embodiment of the invention the interactive user interface is embodied as one or more world wide web (WWW) pages in a WWW server 23.")

Referring to claim 17,

Pyotsia teaches the system of claim11, wherein the user on the remote network sends a suggestion regarding an operation of the at least one item being monitored to an entity managing the at least one item on the local network (col. 6, line 63-col. 7, line 67, "FIG. 3 illustrates the wireless control arrangement according to the present invention when using the WAP. The diagnostic system 21, device database 22 as well

as the WWW server 33 may be similar to those described with reference to FIG. 2. However, content of WWW pages may be created so that the use of WAP and WML is taken into account, e.g. by providing simple WWW pages with the HTML language or by using the WML language in the WWW pages. The mobile terminal MT is provided with a WAP micro browser, whereas the data connection through the mobile communication network 26 is similar to that in FIG. 2. A WAP gateway 35 provides a connection between the mobile communication network 26 and the WWW technology in the internet 24. Firstly, the WAP gateway 35 translates WAP requests to WWW requests thereby allowing the WAP micro browser in the mobile terminal MT to submit requests to the WWW server 33. The WAP gateway 35 also translates the responses from the WWW server 33 into a format understood by the micro browser in the MT. If the WWW server 33 provides a WAP content (e.g., WML), the WAP gateway 35 retrieves it directly from the WWW server and forwards it to the MT. However, if the WWW server 33 provides a WWW content (such as HTML), the WAP gateway 35 (or a separate filter unit) translates the WWW content (e.g., HTML) into a WAP content (e.g., WML). This translation is also called filtering since it often extracts the essential parts of the WWW content for translation. A further advantage of the WAP is that it inherently provides a connection security between the MT and the WWW server 33. The security and the authentication of the user is especially important when the inventive arrangement is used for configuration and control of the field devices. As the configuration and control commands will affect on the operation of the plant, a system according to the invention has to assure that the user is an authorized user. It may also be possible to create a

WWW server 33 that includes the WAP gateway functionality 35, in order to facilitate end-to-end security solutions, or to achieve better access control or a guarantee of responsiveness. The WWW server 23 and 33 utilizes the data in the device database 22 for creating the interactive WWW pages for browsing the data and for control and configuration of the field devices. As the server 23 or 33 uses the same database with the diagnostic system 21, the contents of the WWW pages are always up-to-date. The mobile terminal MT is able to browse the diagnostic and configuration data in the device database 22 by means of the interactive WWW pages. In response to the requests and selections made by the user in the interactive WWW pages the WWW server 23 makes inquiries to the device database 22, and a new WWW page is created according to the data obtained from the database 22. The created WWW page may include diagnostic data, status and an operation history data of the selected field device, as well as information required for controlling and configuring the field device. According to the user's selections an appropriate piece of data is shown in the WWW page in text format, graphical format and/or in any other suitable format, together with the fields or links for making further selections or commands. The server 23 or 33 translates the configuration or control commands made by the user in the interactive WWW page into configuration commands used in the interface between the WWW server 23 or 33 and the diagnostic system 21, typically based on the information obtained from the database 22. The interface between the server 23 and the diagnostic system 21 may be OLE (Object Linking and Embedding) The diagnostic system 21 forwards the control and configuration commands received from the server 23 or 33 to the field devices, typically

upon translating the generic commands into the device specific instructions. As a result, an "on-line" connection from the mobile terminal MT to the field device is provided.", col. 8, line 1-22, "By means of the inventive interactive user interface and the "on-line" connection, the maintenance personnel is able to retrieve information on the operation of a desired field device, such as a control valve, and display it on the user interface of the mobile terminal. The information may be displayed in a text format and/or graphical format. The information may also include alarms and any operation parameters which the maintenance person wishes to monitor on-line, such as the opening of a valve. The operational data obtained by the mobile terminal MT allows the maintenance person to immediately make a decision on the maintenance need of the respective field device, i.e. whether it is possible to postpone the maintenance operation up to the next shut down of the plant or whether special arrangements are needed in order to avoid an unintentional shutdown. During the shutdown of the plant the mobile terminal can be used for performing various field test for the field device, such as a step response test or a hystheresis test for a control valve. Also during the operation of the plant the diagnostic system 21 may allow the mobile terminal to perform a forced control of the field device to a desired mode of operation or position.")

Referring to claim 18,

Pyotsia teaches the system of claim ii, wherein the equipment diagnostic monitor system sends an alert to a predetermined entity when an analysis of data received from the at least one item indicates that the at least one item is operating outside of a predetermined performance range (col. 8, line 1-22, "By means of the inventive

interactive user interface and the "on-line" connection, the maintenance personnel is able to retrieve information on the operation of a desired field device, such as a control valve, and display it on the user interface of the mobile terminal. The information may be displayed in a text format and/or graphical format. The information may also include alarms and any operation parameters which the maintenance person wishes to monitor on-line, such as the opening of a valve. The operational data obtained by the mobile terminal MT allows the maintenance person to immediately make a decision on the maintenance need of the respective field device, i.e. whether it is possible to postpone the maintenance operation up to the next shut down of the plant or whether special arrangements are needed in order to avoid an unintentional shutdown. During the shutdown of the plant the mobile terminal can be used for performing various field test for the field device, such as a step response test or a hystheresis test for a control valve. Also during the operation of the plant the diagnostic system 21 may allow the mobile terminal to perform a forced control of the field device to a desired mode of operation or position.")

Referring to claim 19,

Pyotsia teaches the system of claim ii further comprising a remote control proxy server in the intermediate network that is between the local network and the remote network that prevents direct IP routing of a device in the local network that is being accessed by the remote network (Fig. 2, element 23, col. 7, line 22-34, "FIG. 3 illustrates the wireless control arrangement according to the present invention when using the WAP. The diagnostic system 21, device database 22 as well as the WWW

server 33 may be similar to those described with reference to FIG. 2.", "A further advantage of the WAP is that it inherently provides a connection security between the MT and the WWW server 33. The security and the authentication of the user is especially important when the inventive arrangement is used for configuration and control of the field devices. As the configuration and control commands will affect on the operation of the plant, a system according to the invention has to assure that the user is an authorized user. It may also be possible to create a WWW server 33 that includes the WAP gateway functionality 35, in order to facilitate end-to-end security solutions, or to achieve better access control or a guarantee of responsiveness.")

Referring to claim 24,

Pyotsia teaches the data system for accessing remote equipment, comprising:

a first network interface device enabling data transfer between a local network (please refer to col. 5, line 19-26, "With reference to FIG. 2, **a diagnostic system 21** may be any automation system, such as automation system 11 and 12 in FIG. 1, or any field device management or control system, such as the management system 10 in FIG. 1, or combination thereof." **Note: Fig. 1, element 10 which is element 21 of Fig. 2 is an "a first network interface" permitting data transfer from a local network "which is Fig. 2, element "Hart/Field bus and "field devices.")** and an intermediate network (Fig. 1, element "Factory LAN" and including Fig. 2, elements 21 and 23 is "an intermediate network ", please refer to col. 5, line 19-26, "With reference to FIG. 2, **a diagnostic system 21** may be any automation system, such as automation system 11 and 12 in FIG. 1, or any field device management or control system, such as the

management system 10 in FIG. 1, or combination thereof. A characteristic feature of the diagnostic system is that it comprises a wired connection, such as a field bus or a HART bus, to field devices 14, 15 and 16, and is able to control or configure the field devices, or to read measurement or status data from the field devices." **note: Thus, "the management system 10" is a diagnostic system 21 of Fig. 2 interfacing the Factory LAN" of Fig. 1.)** (Fig. 2, element 21's interface showing OLE and "data" going into element 23) Fig.2, element 23); a local network interface permitting data transfer between a local network and an intermediate network (please refer to col. 5, line 19-26, "With reference to FIG. 2, **a diagnostic system 21** may be any automation system, such as automation system 11 and 12 in FIG. 1, or any field device management or control system, such as the management system 10 in FIG. 1, or combination thereof." **Note: Fig. 1, element 10 which is element 21 of Fig. 2 is an "a local network interface" permitting data transfer from a local network "which is Fig. 2, element "Hart/Field bus and "field devices.");**

a second network interface device (Fig. 2, element 23) enabling data transfer between a remote network and the intermediate network (Fig. 2, element 24, 25, 26, col. 6, line 3-41); and

an equipment diagnostic monitor system configured to allow a user of the remote network to remotely control a diagnostic test performed on the equipment for monitoring a health of the equipment, the equipment being located in the local network, the equipment diagnostic monitoring system being located within the intermediate network, the equipment diagnostic monitoring system having at least a monitoring module, an

analysis module, an alerts module and an active transfer module (col. 6, line 63-col. 7, line 67, "FIG. 3 illustrates the wireless control arrangement according to the present invention when using the WAP. The diagnostic system 21, device database 22 as well as the WWW server 33 may be similar to those described with reference to FIG. 2. However, content of WWW pages may be created so that the use of WAP and WML is taken into account, e.g. by providing simple WWW pages with the HTML language or by using the WML language in the WWW pages. The mobile terminal MT is provided with a WAP micro browser, whereas the data connection through the mobile communication network 26 is similar to that in FIG. 2. A WAP gateway 35 provides a connection between the mobile communication network 26 and the WWW technology in the internet 24. Firstly, the WAP gateway 35 translates WAP requests to WWW requests thereby allowing the WAP micro browser in the mobile terminal MT to submit requests to the WWW server 33. The WAP gateway 35 also translates the responses from the WWW server 33 into a format understood by the micro browser in the MT. If the WWW server 33 provides a WAP content (e.g., WML), the WAP gateway 35 retrieves it directly from the WWW server and forwards it to the MT. However, if the WWW server 33 provides a WWW content (such as HTML), the WAP gateway 35 (or a separate filter unit) translates the WWW content (e.g., HTML) into a WAP content (e.g., WML). This translation is also called filtering since it often extracts the essential parts of the WWW content for translation. A further advantage of the WAP is that it inherently provides a connection security between the MT and the WWW server 33. The security and the authentication of the user is especially important when the inventive arrangement is

used for configuration and control of the field devices. As the configuration and control commands will affect on the operation of the plant, a system according to the invention has to assure that the user is an authorized user. It may also be possible to create a WWW server 33 that includes the WAP gateway functionality 35, in order to facilitate end-to-end security solutions, or to achieve better access control or a guarantee of responsiveness. The WWW server 23 and 33 utilizes the data in the device database 22 for creating the interactive WWW pages for browsing the data and for control and configuration of the field devices. As the server 23 or 33 uses the same database with the diagnostic system 21, the contents of the WWW pages are always up-to-date. The mobile terminal MT is able to browse the diagnostic and configuration data in the device database 22 by means of the interactive WWW pages. In response to the requests and selections made by the user in the interactive WWW pages the WWW server 23 makes inquiries to the device database 22, and a new WWW page is created according to the data obtained from the database 22. The created WWW page may include diagnostic data, status and an operation history data of the selected field device, as well as information required for controlling and configuring the field device. According to the user's selections an appropriate piece of data is shown in the WWW page in text format, graphical format and/or in any other suitable format, together with the fields or links for making further selections or commands. The server 23 or 33 translates the configuration or control commands made by the user in the interactive WWW page into configuration commands used in the interface between the WWW server 23 or 33 and the diagnostic system 21, typically based on the information obtained from the database

22. The interface between the server 23 and the diagnostic system 21 may be OLE (Object Linking and Embedding) The diagnostic system 21 forwards the control and configuration commands received from the server 23 or 33 to the field devices, typically upon translating the generic commands into the device specific instructions. As a result, an "on-line" connection from the mobile terminal MT to the field device is provided.", col. 8, line 1-22, "By means of the inventive interactive user interface and the "on-line" connection, the maintenance personnel is able to retrieve information on the operation of a desired field device **(an active transfer module)**, such as a control valve, and display it on the user interface of the mobile terminal. The information may be displayed in a text format and/or graphical format. The information may also include **alarms (alerts module)** and any operation parameters which the maintenance person wishes to monitor on-line, such as the opening of a valve. The operational data obtained by the mobile terminal MT allows the maintenance person to immediately make a decision on the maintenance need of the respective field device, i.e. whether it is possible to postpone the maintenance operation up to the next shut down of the plant or whether special arrangements are needed in order to avoid an unintentional shutdown. During the shutdown of the plant the mobile terminal can be used for performing various field test for the field device, such as a step response test or a hystheresis test for a control valve. Also during the operation of the plant the diagnostic system 21 may allow the mobile terminal to perform a forced control of the field device to a desired mode of operation or position." Col. 5, line 27-53, "For this purpose, the diagnostic system 21 comprises a management and control software for the field

devices. In the preferred embodiment each field device type (e.g. two different control valves or control valves of different manufacturers may represent different device types) is provided with a specific control software which contains all necessary data and instructions sets for controlling, configuring, reading, etc., the field devices of a predetermined time **(Analysis module)**. Normally these operations can be made by a control room personnel from a work station. A device database 22 stores information on each field device controlled by the diagnostic system 21 and, preferably, all diagnostics data read from the field devices. In other words, the database 22 contains an updated configuration of field devices as well as the operation history thereof **(Monitoring module).** In accordance to the principles of the present invention, the diagnostic system 21 is further provided with an interactive user interface which utilize the configuration, control and management data in the database 22 and is accessible by the mobile terminal MT through a dedicated data connection established over the cellular communication system 26, in order to selectively control, configure or monitor the field devices 14, 15 and 16 connected to the diagnostic system 21. In the preferred embodiment of the invention the interactive user interface is embodied as one or more world wide web (WWW) pages in a WWW server 23.")

wherein the equipment diagnostic monitor system is configured to monitor at least one activity performed on the equipment in the local network and the intermediate network is configured to receive and selectively process data from the remote network depending on a set of predetermined criteria applied by the intermediate network and send the processed data to the local network(col. 6, line 63-col. 7, line 67, "FIG. 3

illustrates the wireless control arrangement according to the present invention when using the WAP. The diagnostic system 21, device database 22 as well as the WWW server 33 may be similar to those described with reference to FIG. 2. However, content of WWW pages may be created so that the use of WAP and WML is taken into account, e.g. by providing simple WWW pages with the HTML language or by using the WML language in the WWW pages. The mobile terminal MT is provided with a WAP micro browser, whereas the data connection through the mobile communication network 26 is similar to that in FIG. 2. A WAP gateway 35 provides a connection between the mobile communication network 26 and the WWW technology in the internet 24. Firstly, the WAP gateway 35 translates WAP requests to WWW requests thereby allowing the WAP micro browser in the mobile terminal MT to submit requests to the WWW server 33. The WAP gateway 35 also translates the responses from the WWW server 33 into a format understood by the micro browser in the MT. If the WWW server 33 provides a WAP content (e.g., WML), the WAP gateway 35 retrieves it directly from the WWW server and forwards it to the MT. However, if the WWW server 33 provides a WWW content (such as HTML), the WAP gateway 35 (or a separate filter unit) translates the WWW content (e.g., HTML) into a WAP content (e.g., WML). This translation is also called filtering since it often extracts the essential parts of the WWW content for translation. A further advantage of the WAP is that it inherently provides a connection security between the MT and the WWW server 33. The security and the authentication of the user is especially important when the inventive arrangement is used for configuration and control of the field devices. As the configuration and control

commands will affect on the operation of the plant, a system according to the invention has to assure that the user is an authorized user. It may also be possible to create a WWW server 33 that includes the WAP gateway functionality 35, in order to facilitate end-to-end security solutions, or to achieve better access control or a guarantee of responsiveness. The WWW server 23 and 33 utilizes the data in the device database 22 for creating the interactive WWW pages for browsing the data and for control and configuration of the field devices. As the server 23 or 33 uses the same database with the diagnostic system 21, the contents of the WWW pages are always up-to-date. The mobile terminal MT is able to browse the diagnostic and configuration data in the device database 22 by means of the interactive WWW pages. In response to the requests and selections made by the user in the interactive WWW pages the WWW server 23 makes inquiries to the device database 22, and a new WWW page is created according to the data obtained from the database 22. The created WWW page may include diagnostic data, status and an operation history data of the selected field device, as well as information required for controlling and configuring the field device. According to the user's selections an appropriate piece of data is shown in the WWW page in text format, graphical format and/or in any other suitable format, together with the fields or links for making further selections or commands. The server 23 or 33 translates the configuration or control commands made by the user in the interactive WWW page into configuration commands used in the interface between the WWW server 23 or 33 and the diagnostic system 21, typically based on the information obtained from the database 22. The interface between the server 23 and the diagnostic system 21 may be OLE

(Object Linking and Embedding) The diagnostic system 21 forwards the control and configuration commands received from the server 23 or 33 to the field devices, typically upon translating the generic commands into the device specific instructions. As a result, an "on-line" connection from the mobile terminal MT to the field device is provided.").

Referring to claim 25,

Pyotsia teaches the system of claim 24, further comprising a security module located within the intermediate network, through which data transferred between the local network and the remote network passes (col. 7, line 22-34, "FIG. 3 illustrates the wireless control arrangement according to the present invention when using the WAP. The diagnostic system 21, device database 22 as well as the WWW server 33 may be similar to those described with reference to FIG. 2.", "A further advantage of the WAP is that it inherently provides a connection security between the MT and the WWW server 33. The security and the authentication of the user is especially important when the inventive arrangement is used for configuration and control of the field devices. As the configuration and control commands will affect on the operation of the plant, a system according to the invention has to assure that the user is an authorized user. It may also be possible to create a WWW server 33 that includes the WAP gateway functionality 35, in order to facilitate end-to-end security solutions, or to achieve better access control or a guarantee of responsiveness.")

Referring to claim 26,

Pyotsia teaches the system of claim 25, wherein data transfer between each of the networks occurs via an Internet Protocol (IP) (Fig. 2, elements 26, 24 25 and 23 are located in the internet environment.)

Referring to claim 27,

Pyotsia fails to teach the system of claim 26, wherein the security module hides an IP addresses of the local network and the remote network from each other.

Reid teaches "A rewrite node is a point in an access rule where source or destination addresses are mapped to other source or destination addresses. Destination IP address rewrites allow an inbound connection through network address translation (NAT) address hiding to be remapped to a destination inside the NAT barrier. Source address rewrites can be used on outbound connections to make the source appear to be one of many external addresses. This process allows the internal hosts to be aliased to external addresses. Rewrites can be based on any connection criteria, including users.", col. 6, lines 46-56. (wherein the data transfer between each of the networks occurs via the Internet Protocol (IP), and wherein each network has its own unique IP address, and the system of claim 2, wherein the module hides the IP addresses of the remote network and the local network from each other.)

One of ordinary skill in the art could have substituted "WAP security of Pyotsia by known methods. For example, Pyotsia discloses security by WAP protocol and Reid discloses "Destination IP address rewrites allow an inbound connection through network address translation (NAT) address hiding to be remapped to a destination inside the NAT barrier" , and the results would have been a predictable use of known technique of

providing security over the network . Thus, it would have been obvious to one of ordinary skill in the art to replace the WAP security with a network address translation (NAT)

It would have been obvious because it provides a method for controlling interactions between networks by the use of firewalls with defined regions as taught by Reid.

Referring to claim 28,

Pyotsia teaches the system of claim 24, wherein the equipment diagnostic monitor system is configured to collect and analyze data from at least one test performed on the equipment item (col. 8, line 1-22, “By means of the inventive interactive user interface and the "on-line" connection, the maintenance personnel is able to retrieve information on the operation of a desired field device, such as a control valve, and display it on the user interface of the mobile terminal. The information may be displayed in a text format and/or graphical format. The information may also include alarms and any operation parameters which the maintenance person wishes to monitor on-line, such as the opening of a valve. The operational data obtained by the mobile terminal MT allows the maintenance person to immediately make a decision on the maintenance need of the respective field device, i.e. whether it is possible to postpone the maintenance operation up to the next shut down of the plant or whether special arrangements are needed in order to avoid an unintentional shutdown. During the shutdown of the plant the mobile terminal can be used for performing various field test for the field device, such as a step response test or a hystheresis test for a control

valve. Also during the operation of the plant the diagnostic system 21 may allow the mobile terminal to perform a forced control of the field device to a desired mode of operation or position." Col. 5, line 27-53, "For this purpose, the diagnostic system 21 comprises a management and control software for the field devices. In the preferred embodiment each field device type (e.g. two different control valves or control valves of different manufacturers may represent different device types) is provided with a specific control software which contains all necessary data and instructions sets for controlling, configuring, reading, etc., the field devices of a predetermined time. Normally these operations can be made by a control room personnel from a work station. A device database 22 stores information on each field device controlled by the diagnostic system 21 and, preferably, all diagnostics data read from the field devices. In other words, the database 22 contains an updated configuration of field devices as well as the operation history thereof. In accordance to the principles of the present invention, the diagnostic system 21 is further provided with an interactive user interface which utilize the configuration, control and management data in the database 22 and is accessible by the mobile terminal MT through a dedicated data connection established over the cellular communication system 26, in order to selectively control, configure or monitor the field devices 14, 15 and 16 connected to the diagnostic system 21. In the preferred embodiment of the invention the interactive user interface is embodied as one or more world wide web (WWW) pages in a WWW server 23.")

Referring to claim 29,

Pyotsia teaches the system of claim 24, wherein the equipment diagnostic monitor system is configured to execute or ignore a request from the user on the remote network based on a set of predetermined criteria, wherein the user requests that tests be performed on the equipment, and that other data be uploaded from previous tests performed on the equipment(col. 5, line 40-42, “In other words, the database 22 contain an updated configuration of field devices as well as the operation history thereof.", col. 7, line 47-50, “The created WWW page may include diagnostic data, status and an operation history data of the selected field device, as well as information required for controlling and configuring the field device.", col. 8, line 1-22, “By means of the inventive interactive user interface and the "on-line" connection, the maintenance personnel is able to retrieve information on the operation of a desired field device, such as a control valve, and display it on the user interface of the mobile terminal. The information may be displayed in a text format and/or graphical format. The information may also include alarms and any operation parameters which the maintenance person wishes to monitor on-line, such as the opening of a valve. The operational data obtained by the mobile terminal MT allows the maintenance person to immediately make a decision on the maintenance need of the respective field device, i.e. whether it is possible to postpone the maintenance operation up to the next shut down of the plant or whether special arrangements are needed in order to avoid an unintentional shutdown. During the shutdown of the plant the mobile terminal can be used for performing various field test for the field device, such as a step response test or a hystheresis test for a control valve. Also during the operation of the plant the diagnostic system 21 may allow the

mobile terminal to perform a forced control of the field device to a desired mode of operation or position." Col. 5, line 27-53, "For this purpose, the diagnostic system 21 comprises a management and control software for the field devices. In the preferred embodiment each field device type (e.g. two different control valves or control valves of different manufacturers may represent different device types) is provided with a specific control software which contains all necessary data and instructions sets for controlling, configuring, reading, etc., the field devices of a predetermined time. Normally these operations can be made by a control room personnel from a work station. A device database 22 stores information on each field device controlled by the diagnostic system 21 and, preferably, all diagnostics data read from the field devices. In other words, the database 22 contains an updated configuration of field devices as well as the operation history thereof. In accordance to the principles of the present invention, the diagnostic system 21 is further provided with an interactive user interface which utilize the configuration, control and management data in the database 22 and is accessible by the mobile terminal MT through a dedicated data connection established over the cellular communication system 26, in order to selectively control, configure or monitor the field devices 14, 15 and 16 connected to the diagnostic system 21. In the preferred embodiment of the invention the interactive user interface is embodied as one or more world wide web (WWW) pages in a WWW server 23.").

Referring to claim 30,

Pyotsia teaches the system of claim 24, wherein the local network is configured to receive and display a suggestion from the user on the remote network regarding the

operation of the equipment being monitored on the local network (col. 6, line 63-col. 7, line 67, "FIG. 3 illustrates the wireless control arrangement according to the present invention when using the WAP. The diagnostic system 21, device database 22 as well as the WWW server 33 may be similar to those described with reference to FIG. 2. However, content of WWW pages may be created so that the use of WAP and WML is taken into account, e.g. by providing simple WWW pages with the HTML language or by using the WML language in the WWW pages. The mobile terminal MT is provided with a WAP micro browser, whereas the data connection through the mobile communication network 26 is similar to that in FIG. 2. A WAP gateway 35 provides a connection between the mobile communication network 26 and the WWW technology in the internet 24. Firstly, the WAP gateway 35 translates WAP requests to WWW requests thereby allowing the WAP micro browser in the mobile terminal MT to submit requests to the WWW server 33. The WAP gateway 35 also translates the responses from the WWW server 33 into a format understood by the micro browser in the MT. If the WWW server 33 provides a WAP content (e.g., WML), the WAP gateway 35 retrieves it directly from the WWW server and forwards it to the MT. However, if the WWW server 33 provides a WWW content (such as HTML), the WAP gateway 35 (or a separate filter unit) translates the WWW content (e.g., HTML) into a WAP content (e.g., WML). This translation is also called filtering since it often extracts the essential parts of the WWW content for translation. A further advantage of the WAP is that it inherently provides a connection security between the MT and the WWW server 33. The security and the authentication of the user is especially important when the inventive arrangement is

used for configuration and control of the field devices. As the configuration and control commands will affect on the operation of the plant, a system according to the invention has to assure that the user is an authorized user. It may also be possible to create a WWW server 33 that includes the WAP gateway functionality 35, in order to facilitate end-to-end security solutions, or to achieve better access control or a guarantee of responsiveness. The WWW server 23 and 33 utilizes the data in the device database 22 for creating the interactive WWW pages for browsing the data and for control and configuration of the field devices. As the server 23 or 33 uses the same database with the diagnostic system 21, the contents of the WWW pages are always up-to-date. The mobile terminal MT is able to browse the diagnostic and configuration data in the device database 22 by means of the interactive WWW pages. In response to the requests and selections made by the user in the interactive WWW pages the WWW server 23 makes inquiries to the device database 22, and a new WWW page is created according to the data obtained from the database 22. The created WWW page may include diagnostic data, status and an operation history data of the selected field device, as well as information required for controlling and configuring the field device. According to the user's selections an appropriate piece of data is shown in the WWW page in text format, graphical format and/or in any other suitable format, together with the fields or links for making further selections or commands. The server 23 or 33 translates the configuration or control commands made by the user in the interactive WWW page into configuration commands used in the interface between the WWW server 23 or 33 and the diagnostic system 21, typically based on the information obtained from the database

22. The interface between the server 23 and the diagnostic system 21 may be OLE (Object Linking and Embedding) The diagnostic system 21 forwards the control and configuration commands received from the server 23 or 33 to the field devices, typically upon translating the generic commands into the device specific instructions. As a result, an "on-line" connection from the mobile terminal MT to the field device is provided.", col. 8, line 1-22, "By means of the inventive interactive user interface and the "on-line" connection, the maintenance personnel is able to retrieve information on the operation of a desired field device, such as a control valve, and display it on the user interface of the mobile terminal. The information may be displayed in a text format and/or graphical format. The information may also include alarms and any operation parameters which the maintenance person wishes to monitor on-line, such as the opening of a valve. The operational data obtained by the mobile terminal MT allows the maintenance person to immediately make a decision on the maintenance need of the respective field device, i.e. whether it is possible to postpone the maintenance operation up to the next shut down of the plant or whether special arrangements are needed in order to avoid an unintentional shutdown. During the shutdown of the plant the mobile terminal can be used for performing various field test for the field device, such as a step response test or a hystheresis test for a control valve. Also during the operation of the plant the diagnostic system 21 may allow the mobile terminal to perform a forced control of the field device to a desired mode of operation or position.").

Referring to claim 31,

Pyotsia teaches the system of claim 24, wherein the equipment diagnostic monitor system is configured to send an alert to a predetermined entity when the analysis of the data indicates that the equipment is operating outside of a predetermined performance range col. 8, line 1-22, “By means of the inventive interactive user interface and the "on-line" connection, the maintenance personnel is able to retrieve information on the operation of a desired field device, such as a control valve, and display it on the user interface of the mobile terminal. The information may be displayed in a text format and/or graphical format. The information may also include alarms and any operation parameters which the maintenance person wishes to monitor on-line, such as the opening of a valve. The operational data obtained by the mobile terminal MT allows the maintenance person to immediately make a decision on the maintenance need of the respective field device, i.e. whether it is possible to postpone the maintenance operation up to the next shut down of the plant or whether special arrangements are needed in order to avoid an unintentional shutdown. During the shutdown of the plant the mobile terminal can be used for performing various field test for the field device, such as a step response test or a hystheresis test for a control valve. Also during the operation of the plant the diagnostic system 21 may allow the mobile terminal to perform a forced control of the field device to a desired mode of operation or position.”).

Referring to claim 32,

Pyotsia teaches the system of claim 24, further comprising an interface proxy located in the intermediate network, the interface proxy being configured to permit data

transfer between the equipment diagnostic system and the remote network (Fig. 2, element 23, col. 7, line 22-34, "FIG. 3 illustrates the wireless control arrangement according to the present invention when using the WAP. The diagnostic system 21, device database 22 as well as the WWW server 33 may be similar to those described with reference to FIG. 2.", "A further advantage of the WAP is that it inherently provides a connection security between the MT and the WWW server 33. The security and the authentication of the user is especially important when the inventive arrangement is used for configuration and control of the field devices. As the configuration and control commands will affect on the operation of the plant, a system according to the invention has to assure that the user is an authorized user. It may also be possible to create a WWW server 33 that includes the WAP gateway functionality 35, in order to facilitate end-to-end security solutions, or to achieve better access control or a guarantee of responsiveness.")

Referring to claim 33,

Pyotsia teaches the system of claim 1, wherein the intermediate network is configured to accept or reject information transmitted by the remote network depending on a set of predetermined criteria applied by the intermediate network(col. 7, line 22-34, "FIG. 3 illustrates the wireless control arrangement according to the present invention when using the WAP. The diagnostic system 21, device database 22 as well as the WWW server 33 may be similar to those described with reference to FIG. 2.", "A further advantage of the WAP is that it inherently provides a connection security between the MT and the WWW server 33. The security and the authentication of the user is

especially important when the inventive arrangement is used for configuration and control of the field devices. As the configuration and control commands will affect on the operation of the plant, a system according to the invention has to assure that the user is an authorized user. It may also be possible to create a WWW server 33 that includes the WAP gateway functionality 35, in order to facilitate end-to-end security solutions, or to achieve better access control or a guarantee of responsiveness.")

Referring to claim 34,

Pyotsia teaches the system of claim 6, wherein the data is selectively passed between the local network and the remote network depending on a set of predetermined criteria applied by the intermediate network (col. 7, line 22-34, "FIG. 3 illustrates the wireless control arrangement according to the present invention when using the WAP. The diagnostic system 21, device database 22 as well as the WWW server 33 may be similar to those described with reference to FIG. 2.", "A further advantage of the WAP is that it inherently provides a connection security between the MT and the WWW server 33. The security and the authentication of the user is especially important when the inventive arrangement is used for configuration and control of the field devices. As the configuration and control commands will affect on the operation of the plant, a system according to the invention has to assure that the user is an authorized user. It may also be possible to create a WWW server 33 that includes the WAP gateway functionality 35, in order to facilitate end-to-end security solutions, or to achieve better access control or a guarantee of responsiveness.")

11. Claims 20-23 , 35 and 36 are rejected under 35 U.S.C. 103(a) as being Pyotsia et al. (hereinafter Pyotsia) (US 7, 010, 294 B1) in view of Reid et al. (hereinafter Reid)(US 6, 182, 226 B1) and further in view of Crist et al. (hereinafter Crist)(US 6, 182, 226 B1)

Referring to claims 20, 21, 22 and 23,

Keeping in my mind the teachings of Pyotsia as stated above, Pyotsia fails to teach the limitations of claims 20-23.

Crist teaches the system of claim further comprising a semiconductor tool coupled to the local network, a user being able to access the semiconductor tool via the remote network, and the system of claim 20, wherein the intermediate network further comprises an equipment diagnostic monitor system that monitors and analyzes the semiconductor tool, and the system of claim 21, wherein the equipment diagnostic monitor system controls tests performed by software within the semiconductor tool, saves data from the tests and sends out alerts to a remote user via the remote network when the semiconductor tool is operating outside a predetermined performance range. (col.4, line15-21, col. 6, line 1-3, col. 6, line 57 through col. 7, line 17) Crist teaches the system of claim 21, wherein the equipment monitor system effects access to the semiconductor tool by a remote user. (col. 6, line 57 through col. 7, line 17)

It would have been obvious to apply the system of Pyotsia to the testing of a semiconductor tool coupled to the local network, as the application promises the predictable results as sated by Pyotsia at col. 6, line 63-col. 7, line 67, “FIG. 3 illustrates the wireless control arrangement according to the present invention when

using the WAP. The diagnostic system 21, device database 22 as well as the WWW server 33 may be similar to those described with reference to FIG. 2. However, content of WWW pages may be created so that the use of WAP and WML is taken into account, e.g. by providing simple WWW pages with the HTML language or by using the WML language in the WWW pages. The mobile terminal MT is provided with a WAP micro browser, whereas the data connection through the mobile communication network 26 is similar to that in FIG. 2. A WAP gateway 35 provides a connection between the mobile communication network 26 and the WWW technology in the internet 24. Firstly, the WAP gateway 35 translates WAP requests to WWW requests thereby allowing the WAP micro browser in the mobile terminal MT to submit requests to the WWW server 33. The WAP gateway 35 also translates the responses from the WWW server 33 into a format understood by the micro browser in the MT. If the WWW server 33 provides a WAP content (e.g., WML), the WAP gateway 35 retrieves it directly from the WWW server and forwards it to the MT. However, if the WWW server 33 provides a WWW content (such as HTML), the WAP gateway 35 (or a separate filter unit) translates the WWW content (e.g., HTML) into a WAP content (e.g., WML). This translation is also called filtering since it often extracts the essential parts of the WWW content for translation. A further advantage of the WAP is that it inherently provides a connection security between the MT and the WWW server 33. The security and the authentication of the user is especially important when the inventive arrangement is used for configuration and control of the field devices. As the configuration and control commands will affect on the operation of the plant, a system according to the invention

has to assure that the user is an authorized user. It may also be possible to create a WWW server 33 that includes the WAP gateway functionality 35, in order to facilitate end-to-end security solutions, or to achieve better access control or a guarantee of responsiveness. The WWW server 23 and 33 utilizes the data in the device database 22 for creating the interactive WWW pages for browsing the data and for control and configuration of the field devices. As the server 23 or 33 uses the same database with the diagnostic system 21, the contents of the WWW pages are always up-to-date. The mobile terminal MT is able to browse the diagnostic and configuration data in the device database 22 by means of the interactive WWW pages. In response to the requests and selections made by the user in the interactive WWW pages the WWW server 23 makes inquiries to the device database 22, and a new WWW page is created according to the data obtained from the database 22. The created WWW page may include diagnostic data, status and an operation history data of the selected field device, as well as information required for controlling and configuring the field device. According to the user's selections an appropriate piece of data is shown in the WWW page in text format, graphical format and/or in any other suitable format, together with the fields or links for making further selections or commands. The server 23 or 33 translates the configuration or control commands made by the user in the interactive WWW page into configuration commands used in the interface between the WWW server 23 or 33 and the diagnostic system 21, typically based on the information obtained from the database 22. The interface between the server 23 and the diagnostic system 21 may be OLE (Object Linking and Embedding) The diagnostic system 21 forwards the control and

configuration commands received from the server 23 or 33 to the field devices, typically upon translating the generic commands into the device specific instructions. As a result, an "on-line" connection from the mobile terminal MT to the field device is provided.", col. 8, line 1-22, "By means of the inventive interactive user interface and the "on-line" connection, the maintenance personnel is able to retrieve information on the operation of a desired field device **(an active transfer module)**, such as a control valve, and display it on the user interface of the mobile terminal. The information may be displayed in a text format and/or graphical format. The information may also include **alarms (alerts module)** and any operation parameters which the maintenance person wishes to monitor on-line, such as the opening of a valve. The operational data obtained by the mobile terminal MT allows the maintenance person to immediately make a decision on the maintenance need of the respective field device, i.e. whether it is possible to postpone the maintenance operation up to the next shut down of the plant or whether special arrangements are needed in order to avoid an unintentional shutdown. During the shutdown of the plant the mobile terminal can be used for performing various field test for the field device, such as a step response test or a hystheresis test for a control valve. Also during the operation of the plant the diagnostic system 21 may allow the mobile terminal to perform a forced control of the field device to a desired mode of operation or position." Col. 5, line 27-53, "For this purpose, the diagnostic system 21 comprises a management and control software for the field devices. In the preferred embodiment each field device type (e.g. two different control valves or control valves of different manufacturers may represent different device types)

is provided with a specific control software which contains all necessary data and instructions sets for controlling, configuring, reading, etc., the field devices of a predetermined time **(Analysis module)**. Normally these operations can be made by a control room personnel from a work station. A device database 22 stores information on each field device controlled by the diagnostic system 21 and, preferably, all diagnostics data read from the field devices. In other words, the database 22 contains an updated configuration of field devices as well as the operation history thereof **(Monitoring module).** In accordance to the principles of the present invention, the diagnostic system 21 is further provided with an interactive user interface which utilize the configuration, control and management data in the database 22 and is accessible by the mobile terminal MT through a dedicated data connection established over the cellular communication system 26, in order to selectively control, configure or monitor the field devices 14, 15 and 16 connected to the diagnostic system 21. In the preferred embodiment of the invention the interactive user interface is embodied as one or more world wide web (WWW) pages in a WWW server 23."

Referring to claim 35,

Pyotsia teaches the system of claim 1 wherein, the intermediate network comprises an equipment diagnostic monitoring system configured to monitor and analyze the at least one semiconductor processing tool and having at least a monitoring module, an analysis module, an alerts module and an active transfer module col. 6, line 63-col. 7, line 67, "FIG. 3 illustrates the wireless control arrangement according to the present invention when using the WAP. The diagnostic system 21, device database 22

as well as the WWW server 33 may be similar to those described with reference to FIG. 2. However, content of WWW pages may be created so that the use of WAP and WML is taken into account, e.g. by providing simple WWW pages with the HTML language or by using the WML language in the WWW pages. The mobile terminal MT is provided with a WAP micro browser, whereas the data connection through the mobile communication network 26 is similar to that in FIG. 2. A WAP gateway 35 provides a connection between the mobile communication network 26 and the WWW technology in the internet 24. Firstly, the WAP gateway 35 translates WAP requests to WWW requests thereby allowing the WAP micro browser in the mobile terminal MT to submit requests to the WWW server 33. The WAP gateway 35 also translates the responses from the WWW server 33 into a format understood by the micro browser in the MT. If the WWW server 33 provides a WAP content (e.g., WML), the WAP gateway 35 retrieves it directly from the WWW server and forwards it to the MT. However, if the WWW server 33 provides a WWW content (such as HTML), the WAP gateway 35 (or a separate filter unit) translates the WWW content (e.g., HTML) into a WAP content (e.g., WML). This translation is also called filtering since it often extracts the essential parts of the WWW content for translation. A further advantage of the WAP is that it inherently provides a connection security between the MT and the WWW server 33. The security and the authentication of the user is especially important when the inventive arrangement is used for configuration and control of the field devices. As the configuration and control commands will affect on the operation of the plant, a system according to the invention has to assure that the user is an authorized user. It may also

be possible to create a WWW server 33 that includes the WAP gateway functionality 35, in order to facilitate end-to-end security solutions, or to achieve better access control or a guarantee of responsiveness. The WWW server 23 and 33 utilizes the data in the device database 22 for creating the interactive WWW pages for browsing the data and for control and configuration of the field devices. As the server 23 or 33 uses the same database with the diagnostic system 21, the contents of the WWW pages are always up-to-date. The mobile terminal MT is able to browse the diagnostic and configuration data in the device database 22 by means of the interactive WWW pages. In response to the requests and selections made by the user in the interactive WWW pages the WWW server 23 makes inquiries to the device database 22, and a new WWW page is created according to the data obtained from the database 22. The created WWW page may include diagnostic data, status and an operation history data of the selected field device, as well as information required for controlling and configuring the field device. According to the user's selections an appropriate piece of data is shown in the WWW page in text format, graphical format and/or in any other suitable format, together with the fields or links for making further selections or commands. The server 23 or 33 translates the configuration or control commands made by the user in the interactive WWW page into configuration commands used in the interface between the WWW server 23 or 33 and the diagnostic system 21, typically based on the information obtained from the database 22. The interface between the server 23 and the diagnostic system 21 may be OLE (Object Linking and Embedding) The diagnostic system 21 forwards the control and configuration commands received from the server 23 or 33 to

the field devices, typically upon translating the generic commands into the device specific instructions. As a result, an "on-line" connection from the mobile terminal MT to the field device is provided.", col. 8, line 1-22, "By means of the inventive interactive user interface and the "on-line" connection, the maintenance personnel is able to retrieve information on the operation of a desired field device **(an active transfer module)**, such as a control valve, and display it on the user interface of the mobile terminal. The information may be displayed in a text format and/or graphical format. The information may also include **alarms (alerts module)** and any operation parameters which the maintenance person wishes to monitor on-line, such as the opening of a valve. The operational data obtained by the mobile terminal MT allows the maintenance person to immediately make a decision on the maintenance need of the respective field device, i.e. whether it is possible to postpone the maintenance operation up to the next shut down of the plant or whether special arrangements are needed in order to avoid an unintentional shutdown. During the shutdown of the plant the mobile terminal can be used for performing various field test for the field device, such as a step response test or a hystheresis test for a control valve. Also during the operation of the plant the diagnostic system 21 may allow the mobile terminal to perform a forced control of the field device to a desired mode of operation or position." Col. 5, line 27-53, "For this purpose, the diagnostic system 21 comprises a management and control software for the field devices. In the preferred embodiment each field device type (e.g. two different control valves or control valves of different manufacturers may represent different device types) is provided with a specific control software which contains all

necessary data and instructions sets for controlling, configuring, reading, etc., the field devices of a predetermined time **(Analysis module).** Normally these operations can be made by a control room personnel from a work station. A device database 22 stores information on each field device controlled by the diagnostic system 21 and, preferably, all diagnostics data read from the field devices. In other words, the database 22 contains an updated configuration of field devices as well as the operation history thereof **(Monitoring module).** In accordance to the principles of the present invention, the diagnostic system 21 is further provided with an interactive user interface which utilize the configuration, control and management data in the database 22 and is accessible by the mobile terminal MT through a dedicated data connection established over the cellular communication system 26, in order to selectively control, configure or monitor the field devices 14, 15 and 16 connected to the diagnostic system 21. In the preferred embodiment of the invention the interactive user interface is embodied as one or more world wide web (WWW) pages in a WWW server 23.")

Pyotsia fails to teach the local network comprises at least one semiconductor processing tool and semiconductor processing tool monitoring equipment; and the remote network comprises remote control equipment configured to allow a user remote access to the at least one semiconductor processing tool.

Crist teaches the local network comprises at least one semiconductor processing tool and semiconductor processing tool monitoring equipment; and the remote network comprises remote control equipment configured to allow a user remote access to the at

least one semiconductor processing tool.(col.4, line15-21, col. 6, line 1-3, col. 6, line 57 through col. 7, line 17, col. 6, line 57 through col. 7, line 17).

It would have been obvious to apply the system of Pyotsia to the testing of a semiconductor tool coupled to the local network, as the application promises the predictable results as sated by Pyotsia at col. 6, line 63-col. 7, line 67, "FIG. 3 illustrates the wireless control arrangement according to the present invention when using the WAP. The diagnostic system 21, device database 22 as well as the WWW server 33 may be similar to those described with reference to FIG. 2. However, content of WWW pages may be created so that the use of WAP and WML is taken into account, e.g. by providing simple WWW pages with the HTML language or by using the WML language in the WWW pages. The mobile terminal MT is provided with a WAP micro browser, whereas the data connection through the mobile communication network 26 is similar to that in FIG. 2. A WAP gateway 35 provides a connection between the mobile communication network 26 and the WWW technology in the internet 24. Firstly, the WAP gateway 35 translates WAP requests to WWW requests thereby allowing the WAP micro browser in the mobile terminal MT to submit requests to the WWW server 33. The WAP gateway 35 also translates the responses from the WWW server 33 into a format understood by the micro browser in the MT. If the WWW server 33 provides a WAP content (e.g., WML), the WAP gateway 35 retrieves it directly from the WWW server and forwards it to the MT. However, if the WWW server 33 provides a WWW content (such as HTML), the WAP gateway 35 (or a separate filter unit) translates the WWW content (e.g., HTML) into a WAP content (e.g., WML). This translation is also

called filtering since it often extracts the essential parts of the WWW content for translation. A further advantage of the WAP is that it inherently provides a connection security between the MT and the WWW server 33. The security and the authentication of the user is especially important when the inventive arrangement is used for configuration and control of the field devices. As the configuration and control commands will affect on the operation of the plant, a system according to the invention has to assure that the user is an authorized user. It may also be possible to create a WWW server 33 that includes the WAP gateway functionality 35, in order to facilitate end-to-end security solutions, or to achieve better access control or a guarantee of responsiveness. The WWW server 23 and 33 utilizes the data in the device database 22 for creating the interactive WWW pages for browsing the data and for control and configuration of the field devices. As the server 23 or 33 uses the same database with the diagnostic system 21, the contents of the WWW pages are always up-to-date. The mobile terminal MT is able to browse the diagnostic and configuration data in the device database 22 by means of the interactive WWW pages. In response to the requests and selections made by the user in the interactive WWW pages the WWW server 23 makes inquiries to the device database 22, and a new WWW page is created according to the data obtained from the database 22. The created WWW page may include diagnostic data, status and an operation history data of the selected field device, as well as information required for controlling and configuring the field device. According to the user's selections an appropriate piece of data is shown in the WWW page in text format, graphical format and/or in any other suitable format, together with the fields or links for

making further selections or commands. The server 23 or 33 translates the configuration or control commands made by the user in the interactive WWW page into configuration commands used in the interface between the WWW server 23 or 33 and the diagnostic system 21, typically based on the information obtained from the database 22. The interface between the server 23 and the diagnostic system 21 may be OLE (Object Linking and Embedding) The diagnostic system 21 forwards the control and configuration commands received from the server 23 or 33 to the field devices, typically upon translating the generic commands into the device specific instructions. As a result, an "on-line" connection from the mobile terminal MT to the field device is provided.", col. 8, line 1-22, "By means of the inventive interactive user interface and the "on-line" connection, the maintenance personnel is able to retrieve information on the operation of a desired field device **(an active transfer module)**, such as a control valve, and display it on the user interface of the mobile terminal. The information may be displayed in a text format and/or graphical format. The information may also include **alarms (alerts module)** and any operation parameters which the maintenance person wishes to monitor on-line, such as the opening of a valve. The operational data obtained by the mobile terminal MT allows the maintenance person to immediately make a decision on the maintenance need of the respective field device, i.e. whether it is possible to postpone the maintenance operation up to the next shut down of the plant or whether special arrangements are needed in order to avoid an unintentional shutdown. During the shutdown of the plant the mobile terminal can be used for performing various field test for the field device, such as a step response test or a

hystheresis test for a control valve. Also during the operation of the plant the diagnostic system 21 may allow the mobile terminal to perform a forced control of the field device to a desired mode of operation or position." Col. 5, line 27-53, "For this purpose, the diagnostic system 21 comprises a management and control software for the field devices. In the preferred embodiment each field device type (e.g. two different control valves or control valves of different manufacturers may represent different device types) is provided with a specific control software which contains all necessary data and instructions sets for controlling, configuring, reading, etc., the field devices of a predetermined time **(Analysis module)**. Normally these operations can be made by a control room personnel from a work station. A device database 22 stores information on each field device controlled by the diagnostic system 21 and, preferably, all diagnostics data read from the field devices. In other words, the database 22 contains an updated configuration of field devices as well as the operation history thereof **(Monitoring module).** In accordance to the principles of the present invention, the diagnostic system 21 is further provided with an interactive user interface which utilize the configuration, control and management data in the database 22 and is accessible by the mobile terminal MT through a dedicated data connection established over the cellular communication system 26, in order to selectively control, configure or monitor the field devices 14, 15 and 16 connected to the diagnostic system 21. In the preferred embodiment of the invention the interactive user interface is embodied as one or more world wide web (WWW) pages in a WWW server 23."

Referring to claim 36,

Keeping in my mind the teachings of Pyotsia as stated above, Pyotsia fails to teach the system of claim ii, wherein the at least one item in the local network is a semiconductor processing tool.

Crist teaches the system of claim further comprising a semiconductor tool coupled to the local network, a user being able to access the semiconductor tool via the remote network, and the system of claim 20, wherein the intermediate network further comprises an equipment diagnostic monitor system that monitors and analyzes the semiconductor tool, and the system of claim 21, wherein the equipment diagnostic monitor system controls tests performed by software within the semiconductor tool, saves data from the tests and sends out alerts to a remote user via the remote network when the semiconductor tool is operating outside a predetermined performance range. (col.4, line15-21, col. 6, line 1-3, col. 6, line 57 through col. 7, line 17) Crist teaches the system of claim 21, wherein the equipment monitor system effects access to the semiconductor tool by a remote user. (col. 6, line 57 through col. 7, line 17)

It would have been obvious to apply the system of Pyotsia to the testing of a semiconductor tool coupled to the local network, as the application promises the predictable results as sated by Pyotsia at col. 6, line 63-col. 7, line 67, "FIG. 3 illustrates the wireless control arrangement according to the present invention when using the WAP. The diagnostic system 21, device database 22 as well as the WWW server 33 may be similar to those described with reference to FIG. 2. However, content of WWW pages may be created so that the use of WAP and WML is taken into account, e.g. by providing simple WWW pages with the HTML language or by using the WML

language in the WWW pages. The mobile terminal MT is provided with a WAP micro browser, whereas the data connection through the mobile communication network 26 is similar to that in FIG. 2. A WAP gateway 35 provides a connection between the mobile communication network 26 and the WWW technology in the internet 24. Firstly, the WAP gateway 35 translates WAP requests to WWW requests thereby allowing the WAP micro browser in the mobile terminal MT to submit requests to the WWW server 33. The WAP gateway 35 also translates the responses from the WWW server 33 into a format understood by the micro browser in the MT. If the WWW server 33 provides a WAP content (e.g., WML), the WAP gateway 35 retrieves it directly from the WWW server and forwards it to the MT. However, if the WWW server 33 provides a WWW content (such as HTML), the WAP gateway 35 (or a separate filter unit) translates the WWW content (e.g., HTML) into a WAP content (e.g., WML). This translation is also called filtering since it often extracts the essential parts of the WWW content for translation. A further advantage of the WAP is that it inherently provides a connection security between the MT and the WWW server 33. The security and the authentication of the user is especially important when the inventive arrangement is used for configuration and control of the field devices. As the configuration and control commands will affect on the operation of the plant, a system according to the invention has to assure that the user is an authorized user. It may also be possible to create a WWW server 33 that includes the WAP gateway functionality 35, in order to facilitate end-to-end security solutions, or to achieve better access control or a guarantee of responsiveness. The WWW server 23 and 33 utilizes the data in the device database

22 for creating the interactive WWW pages for browsing the data and for control and configuration of the field devices. As the server 23 or 33 uses the same database with the diagnostic system 21, the contents of the WWW pages are always up-to-date. The mobile terminal MT is able to browse the diagnostic and configuration data in the device database 22 by means of the interactive WWW pages. In response to the requests and selections made by the user in the interactive WWW pages the WWW server 23 makes inquiries to the device database 22, and a new WWW page is created according to the data obtained from the database 22. The created WWW page may include diagnostic data, status and an operation history data of the selected field device, as well as information required for controlling and configuring the field device. According to the user's selections an appropriate piece of data is shown in the WWW page in text format, graphical format and/or in any other suitable format, together with the fields or links for making further selections or commands. The server 23 or 33 translates the configuration or control commands made by the user in the interactive WWW page into configuration commands used in the interface between the WWW server 23 or 33 and the diagnostic system 21, typically based on the information obtained from the database 22. The interface between the server 23 and the diagnostic system 21 may be OLE (Object Linking and Embedding) The diagnostic system 21 forwards the control and configuration commands received from the server 23 or 33 to the field devices, typically upon translating the generic commands into the device specific instructions. As a result, an "on-line" connection from the mobile terminal MT to the field device is provided.", col. 8, line 1-22, "By means of the inventive interactive user interface and the

"on-line" connection, the maintenance personnel is able to retrieve information on the operation of a desired field device **(an active transfer module)**, such as a control valve, and display it on the user interface of the mobile terminal. The information may be displayed in a text format and/or graphical format. The information may also include **alarms (alerts module)** and any operation parameters which the maintenance person wishes to monitor on-line, such as the opening of a valve. The operational data obtained by the mobile terminal MT allows the maintenance person to immediately make a decision on the maintenance need of the respective field device, i.e. whether it is possible to postpone the maintenance operation up to the next shut down of the plant or whether special arrangements are needed in order to avoid an unintentional shutdown. During the shutdown of the plant the mobile terminal can be used for performing various field test for the field device, such as a step response test or a hystheresis test for a control valve. Also during the operation of the plant the diagnostic system 21 may allow the mobile terminal to perform a forced control of the field device to a desired mode of operation or position." Col. 5, line 27-53, "For this purpose, the diagnostic system 21 comprises a management and control software for the field devices. In the preferred embodiment each field device type (e.g. two different control valves or control valves of different manufacturers may represent different device types) is provided with a specific control software which contains all necessary data and instructions sets for controlling, configuring, reading, etc., the field devices of a predetermined time **(Analysis module)**. Normally these operations can be made by a control room personnel from a work station. A device database 22 stores information

on each field device controlled by the diagnostic system 21 and, preferably, all diagnostics data read from the field devices. In other words, the database 22 contains an updated configuration of field devices as well as the operation history thereof **(Monitoring module).** In accordance to the principles of the present invention, the diagnostic system 21 is further provided with an interactive user interface which utilize the configuration, control and management data in the database 22 and is accessible by the mobile terminal MT through a dedicated data connection established over the cellular communication system 26, in order to selectively control, configure or monitor the field devices 14, 15 and 16 connected to the diagnostic system 21. In the preferred embodiment of the invention the interactive user interface is embodied as one or more world wide web (WWW) pages in a WWW server 23."

Conclusion

Examiner's note: Examiner has cited particular columns and line numbers in the references as applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to the specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ASHOK B. PATEL whose telephone number is (571)272-3972. The examiner can normally be reached on 6:30 am-4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenton Burgess can be reached on (571) 272-3949. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ashok B. Patel/
Primary Examiner, Art Unit 2449